

REMARKS

Claims 1 and 24-45 were rejected in the Final Office Action dated March 18, 2008. Claims 1, 24, 27, 39-40, and 42 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over U.S. Patent 4,125,443 ("Grant") in view of U.S. Patent 4,226,695 ("Matson"). Claim 25 was rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant and Matson and in further view of U.S. Patent 6,024,847 ("Rosenberg") and U.S. Patent 3,966,569 ("Reinhardt"). Claims 26, 29 and 32-33 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant and Matson in further view of U.S. Patent 6,818,105 ("Tojo"). Claim 28 was rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant and Matson in further view of U.S. Patent 4,064,032 ("Bouy"). Claims 30-31 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant, Matson, and Tojo in further view of Reinhardt. Claim 34 was rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant, Matson, and Tojo in further view of U.S. Patent 4,121,130 ("Gange"). Claims 35-37, 41, and 45 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant and Matson in further view of U.S. Patent 5,225,176 ("Greefkes"). Claim 38 was rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant and Matson in further view of Reinhardt. Claims 43 and 44 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant and Matson in further view of U.S. Patent 6,855,241 ("Palmer"). Claims 25, 29-33, 35-38, and 44 are amended.

For at least the following reasons, the rejections of all pending claims should be withdrawn and the claims should be passed to issue. While this paper is believed to completely address all pending rejections, Applicants reserve the right to set forth other reasons supporting the patentability of the claims, including reasons supporting the separate patentability of dependent claims not explicitly addressed herein, in future papers. Further, for any instances in which the Examiner took Official Notice in the Office Action, Applicants expressly do not acquiesce to the taking of Official Notice, and respectfully requests that the Examiner provide an affidavit to support the Official Notice taken in the next Office Action, as required by 37 CFR 1.104(d)(2) and MPEP § 2144.03.

I. Section 103 Rejections

A. Obviousness

With respect to the present Section 103 rejections, the Examiner has failed to meet the burden of stating a prima facie case of obviousness. The MPEP § 2143.01 summarizes the relevant case law as follows:

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art, and all teachings in the prior art must be considered to the extent that they are in analogous arts. Where the teachings of two or more prior art references conflict, the examiner must weigh the power of each reference to suggest solutions to one of ordinary skill in the art, considering the degree to which one reference might accurately discredit another. *In re Young*, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991). (Emphasis added)

In the *KSR International Co. v. Teleflex, Inc.*, 550 U.S. ___, 127 S. Ct. 1727, 82 USPQ2d 1385 (April 30, 2007), the Supreme Court stated that

it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

Id. at 1396. The Court further explained that

What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under §103. One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.

Id. at 1397. Accordingly, the Court made clear that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known and in the prior art." Id. at 1396. Here, the Examiner's rejections should be reversed because the cited references do not teach or suggest any "known problem for which there was an obvious solution encompassed by the patent's claims."

In summary, *KSR* plainly does not disturb the well-settled proposition that a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); M.P.E.P. § 2141.02. Further, the USPTO has published Section 103 Examination Guidelines providing seven rationales for claim rejections as examples of applications of *KSR* under Section 103, consistent with this requirement of *Gore*. *See Section 103 Examination Guidelines*, 72 F.R. 57526 (October 10, 2007).

Under the analysis required by *KSR* and *Graham v. John Deere*, 383 U.S. 1 (1966), the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue. In the present case, the scope and content of prior art, as evidenced by Grant in combination with Matson, does not include a suggested configuration that includes all of the recitations of either independent claim 1 or 42. The differences between the prior art and the claimed subject matter are significant because Applicant's claimed subject matter provides for a redundant and safe apparatus and method for the production of hazardous fluorine gas, while any combination of Grant and Matson could not offer either redundancy or safety.

In other words, "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). Because Grant in combination with Matson fails to teach or suggest the subject matter of both claims 1 and 42, the rejections of claims 1 and 42, and the claims that depend therefrom, under 35 U.S.C. §103(a) based on Grant in view of Matson should be reconsidered and withdrawn.

B. Claim 1

Applicant incorporates by reference the remarks presented in the paper filed on January 3, 2008 with respect to claim 1. To summarize, Grant fails to teach or suggest "a plurality of individual fluorine generating cassettes ... being operably connected to a fluorine gas distribution system" at least because Grant does not disclose "a fluorine gas distribution system." Grant fails to teach or suggest that the "fluorine generating cassettes [are] individually isolatable from said gas

distribution system” at least because valve disclosed by Grant merely regulates the input on the precursor electrolyte into the electrolytic cells. Matson fails to teach or suggest that the “fluorine generating cassettes [are] removable from the apparatus for remote maintenance” at least because Matson merely discloses shutting down a cell for replacement of an electrode. Therefore, the combination of Grant and Matson fails to teach or suggest at least each of the foregoing recitations of Claim 1. In the Final Office Action, the Examiner dismissed these arguments as non-persuasive. (Final Office Action, page 12.)

1. “individual fluorine generating cassettes being operably connected to a fluorine gas distribution system for the remote use and consumption of said fluorine gas”

The combination of Grant and Matson fails to teach or suggest “individual fluorine generating cassettes being operably connected to a fluorine gas distribution system for the remote use and consumption of said fluorine gas.” The Examiner alleged that “the discharge pipe, 5, may perform as the distribution system because the apparatus of Grant et al is for the production of fluorine gas.” (Office Action, page 13.) However, the discharge pipe disclosed by Grant is not used as a “fluorine gas distribution system.” In fact, Grant is absolutely silent with respect to the existence of a “gas distribution system.” At most, the discharge pipe connects the reservoir tank, which holds the electrolyte, to a heat exchanger prior to providing the electrolyte to the fluorine generating cells. (Grant, col. 2, lines 42-45, emphasis added.) Specifically, Grant discloses that “[t]he submersible pump 3 pumps electrolyte through a discharge pipe 5 to a heat exchanger 6 which may be air or water cooled.” (*Id.*, emphasis added.) Accordingly, no fluorine gas passes through the discharge pipe. Moreover, the discharge pipe discharges the electrolyte from the reservoir tank. Because, only the precursor electrolyte passes through the discharge pipe, Grant does not disclose “a plurality of individual fluorine generating cassettes ... being operably connected to a fluorine gas distribution system.”

Accordingly, the rejection of Claim 1, as well as dependent claims 24-41 depending therefrom, should be withdrawn for at least these reasons.

2. “fluorine generating cassettes being individually isolatable from said gas distribution system”

The combination of Grant and Matson fails to teach or suggest “fluorine generating cassettes being individually isolatable from said gas distribution system.” The Examiner alleged that “the flow control valves [disclosed by Grant] act as an isolating mechanism between cassettes/cells.” (Office Action, page 13.) Specifically, Grant discloses that “[t]he electrolyte leaving the monitor 7 passes into electrolytic cells 8 which are connected in parallel between the points 15 and 16 ...through flow control valves 9.” (Grant, col. 2 line 65 – col. 3 line 2; Fig. 1.) Additionally, Grant explains that “[w]ith several cells connected in parallel the flow into each cell is readily controlled so that the electrolyte flow is evenly distributed between the cells by adjustment of valve 9, associated with each cell.” (Grant, col. 3 lines 49-52; Fig. 1.) However, neither discussion of the valve teaches nor suggests “fluorine generating cassettes being individually isolatable from said gas distribution system.” The valves disclosed by Grant merely regulate the flow of the electrolyte precursor into the electrolytic cells and are completely unrelated to any “gas distribution system.” Additionally, as discussed above, Grant is absolutely silent with respect to the existence of a “gas distribution system.”

Even if, arguendo, Grant does disclose a gas distribution system, the valves disclosed by Grant would not allow the electrolytic cells to be “individually isolatable” therefrom because the valves are positioned on the electrolyte input pipe. Thus, even if the valves were closed, the cells would still be connected to the undisclosed “gas distribution system.” At most, the valves disclosed by Grant allow “the flow into each cell [to be] readily controlled so that the electrolyte flow is evenly distributed between the cells.” (Id.) Further, Matson was not cited for and does not teach or suggest “fluorine generating cassettes being individually isolatable from said gas distribution system.” Moreover, Matson does not address any way of isolating the electrochemical cells.

Accordingly, the rejection of Claim 1, as well as dependent claims 24-41 depending therefrom, should be withdrawn for at least these additional reasons.

3. “fluorine generating cassettes being individually ... removable from the apparatus for remote maintenance”

The combination of Grant and Matson fails to teach or suggest “fluorine generating cassettes being individually ... removable from the apparatus for remote maintenance.” The Examiner alleged that “Matson discloses the replacing of electrodes from cells during shutdown [and] [o]ne of ordinary skill in the art would have found it obvious to remove the cells completely instead of each electrode during shutdown in order to keep the individual cells in tact [sic].” (Office Action, page 13.) However, as acknowledged by the Examiner’s very own words Matson merely “discloses the replacing of electrodes from cells during shutdown.” At most, Matson discloses that electrodes may be replaced, which fails to teach or suggest “cassettes being individually ... removable from the apparatus for remote maintenance.” (Matson, col. 8, lines 49-53.) Moreover, disclosing that a cell may be shut down does not teach or suggest “cassettes being individually removable.”

Further, the Examiner has failed to appreciate the reason for “fluorine generating cassettes being individually ... removable from the apparatus for remote maintenance.” Humans cannot interact with an environment containing fluorine gas without the assistance of protective gear due to the extremely hazardous nature of the substance. Providing “fluorine generating cassettes being individually ... removable from the apparatus” allows the cassettes to be transported to a location where “remote maintenance” can be safely performed. In contrast, the cells disclosed by Matson are designed to remove suspended metals from waste water (Matson, Abstract), which is an operation that does not pose a particular hazardous to humans. Thus, the Examiner’s allegation that “[o]ne of ordinary skill in the art would have found it obvious to remove the cells completely instead of each electrode during shutdown in order to keep the individual cells in tact [sic]” has no basis in fact because an operator using the cells disclosed by Matson would not have any reason to remove a cell “individually.” In fact, Matson teaches away from “fluorine generating cassettes being individually ... removable from the apparatus for remote maintenance” by teaching the “replacement of electrodes, etc., while the remaining cells are left on-line.” (Matson, col. 8, lines 49-53.) Matson and Grant simply fail to teach or suggest “fluorine generating cassettes being individually ... removable from the apparatus for remote maintenance.”

Accordingly, the rejection of Claim 1, as well as dependent claims 24-41 depending therefrom, should be withdrawn for at least these further reasons.

C. Claim 42

Although different in scope, claim 42 includes recitations similar to those discussed above with respect to claim 1. Accordingly, claim 42 is allowable over the cited references for at least the reasons stated above. For example, Grant fails to teach or suggest “providing a plurality of fluorine generating cassettes operably connected to a fluorine gas distribution system” at least because Grant does not disclose “a fluorine gas distribution system.” Grant fails to teach or suggest “isolating any individual fluorine generating cassettes from the fluorine gas distribution system and from each other” at least because Grant’s valve merely regulates the input on the precursor electrolyte into the electrolytic cells. Matson fails to teach or suggest “removing the isolated fluorine generating cassette from the apparatus without interruption of supply of fluorine” at least because Matson merely discloses shutting down a cell for replacement of an electrode.

Accordingly, the rejection of Claim 42, as well as dependent claims 43-45 depending therefrom, should be withdrawn for at least these reasons.

D. Dependent Claims

All dependent claims depend either directly or indirectly from one of claims 1 or 42. Therefore, claims 24-41 and 43-45 are in condition for allowance at least because they depend from one of the independent claims 1 or 42. Nevertheless, these dependent claims also recite independently patentable subject matter as will be discussed with respect to certain exemplary claims below.

1. Claim 25

For example, dependent claim 25 recites in part that the “valve mechanism includes a double isolation valve having a space therebetween, [with the] space being connected to a vacuum extraction and scrubbing system configured to remove fluorine gas prior to removal of said fluorine generating cassette.” The Examiner rejected this claim on the basis of Grant and Matson as

discussed above, and further in view of Rosenberg and also in view of Reinhardt. However, the combination of Rosenberg and Reinhardt with Grant and Matson fails to teach or suggest the foregoing recitation.

The Examiner alleged that Reinhardt discloses “a wet scrubber in order to remove dust accompanying the gas.” (Office Action, page 5.) However, claim 25 does not recite a wet scrubber utilizing water, such as shown in Reinhardt. Moreover, there is no dust accompanying the fluorine gas generated by the fluorine generating cassette. In contrast, the “vacuum extraction and scrubbing system” associated with the double isolation valves of claim 25 is “configured to remove fluorine gas prior to removal of said fluorine generating cassette.” Accordingly, Reinhardt does not teach or suggest a “vacuum extraction and scrubbing system” as recited in claim 25. Rosenberg was cited for reason unrelated to the “vacuum extraction and scrubbing system” and, in fact, does not teach or suggest the foregoing claim recitation. In view of the above, claim 25 is patentable over the combination of Grant, Matson, Rosenberg and Reinhardt.

2. Claim 26

In further example, claim 26 recites in part “wherein the fluorine generating cassettes are installable within a common apparatus main enclosure.” Claim 26 was rejected as allegedly obvious over Grant and Matson in view of Tojo. Specifically, the Examiner alleged that Tojo “discloses an apparatus comprising an electrolytic cell 2, with a cabinet/enclosure 1 in order to control the internal atmosphere of the cell.” (Office Action, page 5.) At most, Tojo shows a single fluorine generating cell, 2, within an atmosphere controllable cabinet, 1, (Tojo, Figure 1; col. 6, lines 1-2.) However, rather than arranging an electrolytic cell within a cabinet, claim 26 recites that “the fluorine generating cassettes are installable within a common apparatus.” Installing all of the fluorine generating cassettes in a single common enclosure is significantly different from Tojo’s disclosure of a single fluorine generating cell arranged in an enclosure. In particular, the Examiner appears to be improperly interpreting the terms “cassette” and “cell” to be one in the same. Applicant clearly discloses in the specification the distinction between a cassette and a cell:

In this specification, the apparatus comprises a plurality of self-contained fluorine generating units. The units may be constituted by a single cell insofar as that unit has effectively one cathode and one anode. Alternatively, the unit may comprise

a group of cells insofar as there may be more than one cathode and anode in that unit. Thus, the apparatus according to the present invention comprises a plurality of fluorine generating units which are isolatable one from another and from the apparatus as a whole and each unit is individually removable from the apparatus without interrupting the supply of fluorine from the apparatus as a whole. In the interests of ease of description, an individual fluorine generating unit will be henceforth be termed a “fluorine cassette.”

(Specification, page 7, lines 19-33.) Additionally, the distinction between cassettes and cells is evident from claim 32, which indirectly depends on claim 26 and recites in part that “a fluorine generating cell within said fluorine generating cassette is fixed to said individual enclosure such that said enclosure provides a cathode connection to said cell.” Accordingly, the combination of Grant, Matson, and Tojo fails to teach or suggest “wherein the fluorine generating cassettes are installable within a common apparatus main enclosure.”

3. Claim 34

As another example, claim 34 recites in part “wherein said cathode connection is at 0 volts relative to earth.” The Examiner cited to Gange because it allegedly shows a cathode having a connection at zero volts relative to ground. However, the cathode of the present invention is a cathode of an electrolytic cell for producing fluorine gas, whereas the cathode shown in Gange is a cathode structure for an electron gun. The Examiner further alleged that “Gange describes [at col. 2, lines 60-67] an electrolyte cell, thus, it would have been obvious to combine the cathode disclosed in Gange with modified Grant.” However, despite the allegation made by the Examiner, an electrolyte cell is not disclosed anywhere within Gange. Moreover, the cited portion of Gange merely discloses possible compositions of cathodes, and does not address electrolyte cells or that “said cathode connection is at 0 volts relative to earth.”

Accordingly, claim 34 is patentable over the combination of Grant, Matson, and Gange.

4. Claims 35 and 36

Claim 35 recites in part “at least one fluorine purification cassette through which the fluorine output of said fluorine generating cassettes is passed, said purification cassette comprising a container having chemical traps and filters for removing unwanted material from the fluorine gas output.” Further, claim 36 recites in part “at least one fluorine buffer cassette connected in a

fluorine line downstream of said at least one fluorine purification cassette, said fluorine buffer cassette comprising at least one tank to hold fluorine gas under compression to provide a reserve of fluorine gas.” The Examiner rejected claims 35 and 36 over Grant and Matson in view of Greefkes by alleging that “it would have been obvious ... to use the buffer vessel and purification unit in Greefkes in the apparatus of modified Grant in order to clean the waste gas.” (Office Action, page 9.) However, the buffer vessel and purification unit of Greefkes is designed to operate with liquid water not a gas, and much less fluorine gas. Moreover, the arrangement of the buffer vessel and purification unit does not correspond to the recitations of claims 35 and 36.

At most, Greefkes discloses a water purification unit 10 that is downstream of a buffer vessel, 9. (Greefkes, Figure 1.) Moreover, the buffer of Greefkes is not a buffer in the sense that it holds any gas whatsoever, but imparts chemical effects on water containing dissolved gas which flows through pipe, 8, to the buffer vessel, 9, the buffer vessel, 9, being linked to a water purification unit, 10, (Greefkes, col. 5, lines 10-13). In contrast, claim 35 recites that “purification cassette comprising a container having chemical traps and filters for removing unwanted material from the fluorine gas output.” Additionally, the buffer vessel, 9, of Greefkes is arranged before the purification unit, 10, and is there to serve as a buffer unit in that it imparts a chemical effect to the water flowing into the purification unit, 10. In contrast, claim 36 recites that the “at least one fluorine buffer cassette [is] connected in a fluorine line downstream of said at least one fluorine purification cassette.” Thus, the purification and buffer units of Greefkes serve a completely different and distinct function from those of the present invention.

Accordingly, claims 35 and 35 are patentable over the combination of Grant, Matson, and Greefkes.

5. Claim 38

In further example, claim 38, as amended, recites in part “purging means to remove potentially reactive fluids from piping before fluorine is introduced thereinto, said purging means being connected to pipe work through which fluorine flows and including a source of purging gas to remove said reactive fluids from said pipe work.” The Examiner cited to Grant and Matson in view of Reinhardt to allege that “it would have been obvious ... to use the drainage pipe in Reinhardt in

the apparatus of modified Grant in order to remove filtrate.” (Office Action, page 11.) At most, Reinhardt discloses drainage pipe 43 for the removal of filtrate. (Reinhardt, col. 3, lines 40-47.) However, claim 38 is concerned with purging potentially reactive gases from the fluorine gas distribution system to which the fluorine generating cassettes are ultimately connected, and, in this regard, requires purging with a “purging gas” such as an inert gas or nitrogen, for example. However, it is not seen what possible relevance the drainage pipe, 43, for filtrate has in regard since there is no filtrate to be removed in the present invention and all that is being done is effectively purging or cleaning the fluorine gas distribution system so that no potentially reactive gases remain therein when fluorine is introduced.

Accordingly, the combination of Grant, Matson, and Reinhardt fails to teach or suggest “purging means to remove potentially reactive fluids from piping before fluorine is introduced thereinto.”

6. Claim 43

Additionally, claim 43 recites in part “providing the fluorine generating cassettes with sufficient fluorine generating capacity such that a total demand for fluorine may be met by less than the number of fluorine generating cassettes within said apparatus.” The Examiner cited Grant and Matson in view of Palmer in alleging that “it would have been obvious ... to change the number of cells in Palmer in the method of modified Grant in order to match the changes in demand.” (Office Action, page 12.) However, Palmer relates to capacity scaling in the face of changing demand. (Palmer, col. 9, lines 23-43.) In contrast, claim 43 recites a “total demand” that does not vary. For example, if there are three fluorine generating cassettes within the apparatus then the “total demand” of the plant to which they are connected must be able to be met by at least two of those fluorine generating cassettes should the third one be rendered inoperative for any reason. Thus, “total demand” of the plant to which the apparatus is connected would, in this case, be met by fluorine generating capacity from each cassette of 66%.

Palmer discloses that “as demand changes, other combinations of furnaces and cells can be started up, or turned off, to match the change in demand.” (Palmer, col. 9, lines 23-43, emphasis added.) Additionally, “it is an advantage of the present invention that it is rapid and easy to scale-up

production or to turn-down the capacity of the apparatus to meet any changes in demand, by simply starting up or turning off the correct number and type of units.” (Id.) Accordingly, Palmer discloses an entirely different process from that of claim 43, which requires that total demand must be met by a number of fluorine cassettes less than the total number in the apparatus. Clearly, starting up or turning off apparatus units according to Palmer fails to teach or suggest the recitation of claim 43. Palmer merely states that the apparatus he describes can be turned up or scaled down to meet actual demand, which is not the same as what is claimed in claim 43.

Accordingly, the combination of Grant, Matson, and Palmer fails to teach or suggest “providing the fluorine generating cassettes with sufficient fluorine generating capacity such that a total demand for fluorine may be met by less than the number of fluorine generating cassettes within said apparatus.”

CONCLUSION

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-0013, under Order No. 66221-0037 from which the undersigned is authorized to draw.

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Respectfully submitted,

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